

ATOMIC ENERGY

ROBERT M. SHERMAN, EDITOR. PUBLISHED BI-WEEKLY BY ATOMIC ENERGY NEWS CO., 1000 SIXTH AVENUE, NEW YORK 18, N. Y.

Dear Sir:

August 25th, 1953.
Vol. 10...No. 2

The explosion by the Soviet Union of a thermonuclear device (hydrogen bomb) on August 12th last has now been confirmed by United States and British information. Although Premier Malenkov had announced the Soviet's "mastering the secret" of such devices August 8th, it was not desired by Britain or the United States that they reveal their knowledge of the August 12th explosion. However, the further Soviet announcement August 20th was instrumental in the USAEC's revealing that information showed the August 12th explosion was an accomplished fact. The USAEC also noted that the 1951 and 1952 Eniwetok Atoll experimental explosions included tests involving similar reactions. In both the United States' and the Soviet detonations, the experiments involved both fission and fusion (hydrogen bomb) reactions, since thermonuclear devices require both for their functioning.

Possibly spurred by this event, the United Nation's Disarmament Commission has decided to re-consider international atomic energy control when the Fall meeting starts this year. Diplomats pointed out that the realization that the United States and the Soviet Union each had the potential ability to wreck havoc on the other might accelerate agreements between these nations. In addition, the new USAEC Chairman, Lewis L. Strauss, pointed out that "it is a fallacy to assume that a stockpile of atomic weapons in our hands is in itself any longer a complete deterrent to aggressive action."

Estimates now place the completion date of the second unit at the USAEC's Paducah, Ky., uranium-235 producer plant, in the Fall, of 1954. Substantial progress has been registered at Paducah, to the extent where construction forces there have gone below the 18,000 mark for the first time since work started in January, 1951. Meanwhile, the first unit at Paducah, which started up some 6-months ago, continues to materially add to United States production capacity in this field.

A new USAEC group--the Advisory Committee on Reactor Safeguards has now been formed from two older units, the Reactor Safeguard Committee, and the Industrial Committee on Reactor Location Problems. The new committee, made up of representatives from industrial organizations, educational institutions, insurance firms, and government bodies, will review hazards involved in building or operating nuclear reactor facilities, including criticality experiments, by organizations and by the USAEC.

Some 47 physical research (unclassified) contracts with private research institutions have now been let by the USAEC. In most cases the institution contributes the funds and services which it normally devotes to work in that field, and the USAEC provides additional assistance to purchase equipment and pay salaries of research associates and assistants. In this group was \$375,000 to California Institute of Technology for work in high energy physics. The work will be done by R. F. Bacher, now at Cal Tech, and a former Commissioner of the USAEC.

BUSINESS NEWS...in the nuclear energy field...

NEW PRODUCTION FACILITIES TO BE PROVIDED: Some \$5 million will now be spent by the USAEC to provide facilities, for a production process (details of which are in the classified category), at the Lake Ontario Ordnance Works, 12 miles from Niagara Falls, N. Y. The USAEC is now using the 1000 acre site for storing reusable chemical apparatus, drums, piping, and equipment slightly contaminated by radioactive materials. The present plant will be altered, and new equipment installed, on 250 acres; the balance of 750 acres will be transferred to another Government agency by the USAEC. Singmaster & Breyer, New York, are the architect-engineer contractor designing the facilities. Operating contractor will be Hooker Electrochemical Co., Niagara Falls, N. Y. The renovation and construction of this job is scheduled to begin early this September, with completion date estimated to be January, 1955. It is believed that the construction peak will be reached in the Summer of 1954, when the employment figure will be some 300. When completed, Hooker will use a force of about 125 persons to man the plant.

NUCLEAR ENGINEERING CONFERENCE GIVING WIDE COVERAGE: The ten sessions of the 3-day conference on nuclear engineering (Univ. of Calif., Berkeley, Sept. 9-11) will hear approximately 53 papers on a wide range of subjects connected with the beneficial applications of atomic energy. Delivering the papers will be representatives from academic institutions; from installations operated for the USAEC; from manufacturers of nuclear measurement, handling and other special equipment; and from nuclear consulting firms. On the industrial side, papers will cover: Important Factors in Estimating the Economy of Atomic Power Plants (by General Electric people); Economics of Power Reactor Processing (speakers from Oak Ridge); Technical and Economic Development of Nuclear Power (by George L. Weil, nuclear consultant); Industrial Applications of Ohmart Cells (by Ohmart Corp. people); Temperature Programs and Control Systems for a Nuclear Power Plant (by Westinghouse Electric people); Reactor Control Instruments (by Radiation Counter Laboratories, Inc.) and subjects by others. Engineering subjects will be covered in such papers as: Flow Sensitivity Problems in Nuclear Reactors (by Nuclear Development Associates, Inc. people); Use of Liquid Metal Coolants in Power Reactors (from North American Aviation); Maintenance Work in the Field of Nuclear Energy (by General Electric people); etc. In addition, the physical and biological sciences, as they are concerned with nuclear energy, will be given coverage. (The proceedings of the conference will be available from Calif. Book Co., 2310 Telegraph Ave., Berkeley, Calif., at a cost of \$7.50).

BOOKS, OTHER PUBLICATIONS, & MOTION PICTURES...on nuclear subjects...

MOTION PICTURES- Training film series: The Radioisotope-Eight training films in this series have been completed; the additional five planned will not be produced due to fund limitations. These eight are: (a) Fundamentals of Radioactivity; (b) Properties of Radiation; (c) Practical Procedures of Measurement; (d) Methodology; (e) Principles of Radiological Safety; (f) Practice of Radiological Safety; (g) Agricultural Research; (h) General Sciences. Guides are available on these films, outlining their objectives, scope, and content, as well as their availability. -- Isotopes Div., USAEC, Oak Ridge, Tenn.

A is for Atom: A color film explaining nuclear fission, and highlighting potential benefits in medicine, industry, agriculture, and other fields. Recommended by the maker for showings to business and industry. Produced for General Electric Co. Available from G-E district offices on loan; for sale by G-E at print cost of \$100.

REPORTS- Following publications, covering work by Britain's Atomic Energy Research Establishment, Harwell, are obtainable from Brit. Info. Services, 30 Rockefeller Plaza, New York 20, at prices quoted: (1) Divided drift-tube for focusing proton linear accelerator. 40¢; (2) Demountable tetrode ionization gauge. 40¢; (3) Neutron diffusion at great distances from the source. 65¢.

U.S. GOVERNMENT PUBLICATIONS- (1) Summary report on portland cement concretes for shielding; by Oak Ridge National Laboratory. No. ORNL-1414. 25¢. (2) Simple electromagnetic flowmeter for liquid metals; also by Oak Ridge. No. ORNL-1416. 20¢. (3) 800,000 r/hr Cobalt-60 gamma source; by Brookhaven National Laboratory. No. BNL-1530. 20¢. --Superintendent of Documents, Washington 25, D. C.

ATOMIC ENERGY POLICY...notes on current Washington activities...

Atomic Power Prospects: Public hearings held by the Joint Congressional Committee on Atomic Energy, as a prelude to possible amending of the Atomic Energy Act (1946), which have now concluded, brought forth various opinions on atomic power prospects. Chauncey Starr, North American Aviation, told the Committee that a privately undertaken reactor program which would provide pilot plant experience would require approximately 5-years and cost about \$10 million. (North American has expressed its willingness to undertake this job for anyone who advances the necessary financing.) George Weil, now in private practice, and formerly with the USAEC's reactor development division, suggested that private foundations might sponsor development of atomic power. Another suggestion was made by John R. Menke, of Nuclear Development Associates, consulting nuclear engineers. Dr. Menke observed that exclusive government development of atomic power is not the most desirable course; that this would not be best for the growth of the new industry. Walter Zinn, director, Argonne National Laboratory, and A. M. Weinberg, of Oak Ridge, urged that the USAEC construct an experimental atomic power plant with sufficient capacity to permit the solving of the engineering problems that large-scale operation would entail.

At the close of the Joint Committee's session, a joint resolution was introduced (H.J. Res. 317) by Rep. Holifield, of the Committee, which would declare it to be the "sense" of Congress that: (1) The USAEC should vigorously promote the peacetime applications of atomic energy, as well as reactors for submarines, aircraft carriers, and aircraft; (2) The USAEC should declassify the maximum amount of information, useful for industrial and other purposes, consistent with security requirements; (3) The USAEC should make a detailed report on the declassified technical facts and the political, economic, and other ramifications of peacetime atomic energy; (4) The Joint Committee should continue to study through public hearings the principal issues involved in proposed revisions of the Atomic Energy Act.

International Conference: ATOMIC ENERGY FOR INDUSTRIAL POWER...a report...

Leading research workers from nineteen countries conferred for the first time at this 3-day power conference, held last fortnight at Oslo, Norway, under the auspices of the Atomic Energy Institute. The Institute is a joint project of the Norwegian and Netherlands governments, and is located at Kjeller, near Oslo.

Gunnar Randers, director of the Institute, told the conference that the Institute proposed to build a heavy-water natural-uranium nuclear reactor which would develop 6,000 kilowatts of electricity, and would cost some \$3.5 to \$4 million.

The first power reactor which is being built in Great Britain was described by John V. Dunworth, of the British Atomic Energy Research Establishment, Harwell. Dr. Dunworth pointed out that the reactor was being built on the basis of what materials are available. For that reason, he said, it will use a natural-uranium, pressurized, gas-cooled system.

The conference also had the opportunity to see a motion picture of the experimental homogeneous reactor which is now in operation at the USAEC's Oak Ridge National Laboratory. This is the first reactor to operate at a temperature and power level high enough for the production of steam to run a standard industrial turbine generator. The reactor was further described by A.M. Weinberg, of the Laboratory.

RAW MATERIALS...radioactive minerals for nuclear work...

UNITED STATES: Grand Junction, Colo.: Surface areas that show high radioactivity, when USAEC surface-prospected, will now be announced publicly the 15th of each month at this USAEC office, and at other points the country over. This supplements such announcements that are being made of airborne-prospected findings.... Some \$2,162,378 has been paid uranium miners in the form of a bonus for uranium ores produced from eligible properties since the program began Mar. 1, 1951, this USAEC-office has stated. (These bonus payments double the base price for the first 10,000 lbs. of contained uranium oxide produced and sold from any new property.)..... Casper, Wyoming: Jenkins and Hand, doing exploration for Kerr-McGee Oil Co., have now been granted 31 applications for uranium exploration in southwestern Carbon county.

NEW PRODUCTS, PROCESSES, AND SERVICES...in the nuclear field...

FROM THE INSTRUMENT MANUFACTURERS-Pulse height analyzer, Model 115, may be used as either an integral or differential pulse height analyzer by means of front panel switch. A precision pulse generator is self-contained, for checking the calibration of the unit. Cascode linear amplifier is said to overload "gracefully". Channel width ranges are adjustable, from 0-to 10-volts, while channel width control is achieved with a ten turn Helipot, with $\frac{1}{4}$ -inch duodial. Coincidence and anti-coincidence circuits are self-contained. Amplifier gain is 1000; amplifier attenuator settings are 1, $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$, and $\frac{1}{16}$Linear amplifier, Model 418, is based on the widely used Oak Ridge A1 linear amplifier, and is said to embody the versatility and excellence of that instrument. A ten turn Helipot and Duodial are used for controlling the pulse height discriminator. The coarse gain, for this instrument, is variable in 6 db steps from 0 to 30 db, while the fine gain provides such attenuation from 0 to 6 db. (Also offered by this manufacturer are linear preamplifiers for use with the Model 418.) --Radiation Instrument Development Laboratory, 2337 W. 67th St., Chicago 36, Ill.

FROM THE PHARMACEUTICAL HOUSES- Radioactive iodinated blood albumin: a new research and diagnostic tool with clinical application in cases of burns and shock. The compound, known as RISA, provides a rapid and reliable means of determining whether blood or other fluids need to be replaced in the body, and how much solution should be administered. It is produced with the approval of the National Institutes of Health (a division of the U. S. Public Health Service), and is the first radioactive biological ever licensed by the National Institutes. To make the diagnoses, the physician first injects the harmless RISA into the patient's veins and, a few minutes later, withdraws a blood sample. He then uses an ordinary Geiger counter to measure the radioactivity of the sample. This indicates how much the albumin has been diluted in the blood stream and, consequently, how much fluid needs to be replaced in the body. Diagnostic uses of RISA also include detecting brain tumors from outside the skull, and locating obstructions in the spinal canal. Radioactive iodinated albumin behaves exactly like normal albumin in the blood stream, except that the radioactive iodinated particles are picked up at the site of tumors with a Geiger counter. --Abbott Laboratories, North Chicago, Ill.

PRODUCT NOTES: Cobalt-60, supplied by Tracerlab, Inc., Boston nuclear products processor and supplier, has now been reduced in price by that firm. This radioisotope is used in non-destructive testing (Industrial radiography) of welds, castings, tank hulls, and the like, where it has proved superior to radium as a source both price-wise and in operational characteristics. Tracerlab's new prices now range from \$160 for a 10-mc source, to \$600 for a 10-curie source. This compares with former prices of \$195 to \$1,115, for comparable strengths.

A Chart of the Isotopes, newly available from Harshaw Scientific (division of Harshaw Chemical), Cleveland 4, Ohio, has been prepared for that firm by John R. Bradford, Director, Radioisotopes Laboratory, Case Institute of Technology. The chart is color coded (10-colors), and so designed, to make possible rapid identification of isotope half-life and nuclear stability. Because of the large amount of information readily discernible on the chart, Harshaw feel that the chart should be useful as a teaching aid for universities, colleges, and high schools, in addition to its utility in a research laboratory. (The Chart, which is corrected to Feb. 1st, 1953, is obtainable at \$10.50 from Harshaw, postpaid.)

A new catalog, now issued by Radiation Instrument Development Laboratory, 2337 West 67th St., Chicago 36, Ill., lists that firm's line of nuclear instruments.

PERSONNEL NOTES: New Chief of the National Bureau of Standards Nucleonic Instrumentation Section is Louis Costrell. As section chief he is responsible for the development and construction of special instrumentation for nuclear measurements. In addition, this section undertakes new developments in the nucleonic instrumentation field such as the development and construction of a radiation monitoring system using a telemetering link for transmission of the data.

ATOMIC PATENT DIGEST...latest U. S. patents & applications...

PATENTS AVAILABLE FOR LICENSING: Twenty-eight additional U. S. Government-owned patents, developed through USAEC-sponsored nuclear work, are now available for licensing. Inquiries for such licenses should be directed to the Patent Branch, USAEC, Washington 25, D. C. This new group comprises: (1) Electrical circuit for providing stabilized output pulses having a predetermined width and a substantially rectangular shape. U.S. Pat. No. 2,632,105. (2) Apparatus for packaging a volatile, hygroscopic substance, such as uranium tetrachloride. U.S. Pat. No. 2,659,074. (3) Improved means for compensating for the normal restoring torque of the usual torsional coil suspension employed in galvanometers and fluxmeters. U.S. Pat. No. 2,640,866. (4) An improvement in targets for particle accelerators and a method for producing an intense divergent X-ray beam. U.S. Pat. No. 2,640,924. (5) Improvements in the operation of mass spectrometers, to ensure proper sensitivity of such instruments, as well as protection for the elements within a mass spectrometer against excessive pressure increases. U.S. Pat. No. 2,640,935. (6) Improved method and means for producing an intense electron beam emitted (from an electron source) in a controlled direction with a minimum power expenditure. U.S. Pat. No. 2,640,949. (7) Improvements in point electron sources. U.S. Pat. No. 2,640,950. (8) Variable source of radiation current which may be varied reproducibly. U.S. Pat. No. 2,640,953. (9) Pulse analyzer of the multichannel type, employed in the precision sorting of pulses according to magnitude; especially useful in connection with the scintillation spectrometer or proportional counter. U.S. Pat. No. 2,642,527. (10) Radio-frequency oscillator for a cyclotron; the oscillator circuit is of a floating construction, and has a low-impedance capacitive drive to supply a radio-frequency voltage which is free from parasitic oscillations. U.S. Pat. No. 2,642,531. (11) Method and apparatus for ejecting the ions from the ion chamber of a mass spectrometer, and for selectively focusing ions of different masses. U.S. Pat. No. 2,643,341. (12) Ionization gauge (for a mass spectrometer), of the Phillips or Penning type, employing the magnetic field of the mass spectrometer. U.S. Pat. No. 2,643,342. (13) Apparatus for monitoring X-ray peak voltage. U.S. Pat. No. 2,643,343. (14) Voltage supply regulator to provide effective regulation of D.C. U.S. Pat. No. 2,643,360. (15) Device for suppressing electric surges, and transients from surges; especially useful in suppressing sparking in calutrons. U.S. Pat. No. 2,644,913. (16) Simple, rugged, and portable apparatus to quickly and accurately determine the direction of magnetic lines of force with extreme precision in the presence of an electrostatic field. U.S. Pat. No. 2,644,922. (17) Method of beneficiating mixtures of isotopes and like substances capable of ion transport. U.S. Pat. No. 2,645,610. (18) Airborne device for sampling the gaseous and solid content of a radioactive cloud for purposes of analysis. U.S. Pat. No. 2,645,940. (19) Airborne device for collecting samples of atmospheric dust. U.S. Pat. No. 2,645,941. (20) Apparatus for obtaining samples from the side of a cased well. U.S. Pat. No. 2,646,252. (21) Multi-stage mixer-settler unit wherein the flow of liquids under treatment is co-current in each stage while the flow through the entire unit is counter current. U.S. Pat. No. 2,646,346. (22) Extremely sensitive control system which can maintain a selected temperature within a minute fraction of a degree. U.S. Pat. No. 2,646,544. (23) Electronic circuit for integrating the intervals of duration of electrical pulses. U.S. Pat. No. 2,646,925. (24) Method and apparatus for amplifying electrical impulses with an exceptionally short resolution time. U.S. Pat. No. 2,647,175. (25) Isotope separating apparatus. U.S. Pat. No. 2,647,213. (26) Method and apparatus for sealing and cutting plastic tubing. U.S. Pat. No. 2,647,557. (27) Process for the separation of uranium values from ores by an improved flotation procedure. U.S. Pat. No. 2,647,629. (28) Sealed joints and metallic gaskets which can operate under very rigorous conditions of temperature and pressure. U.S. Pat. No. 2,647,770.

Sincerely,

The Staff,
ATOMIC ENERGY NEWSLETTER

August 25th, 1953.